FULL DEPTH PRECAST CONCRETE DECK PANELS GENERAL NOTES

GUIDELINES

USE THESE GUIDELINE DRAWINGS FOR BRIDGES WHICH HAVE ALL OF THE FOLLOWING CHARACTERISTICS:

TANGENTIAL (NO HORIZONTAL CURVATURE) PANELS PLACED ORTHOGONALLY TO THE BEAM/GIRDERS.

SKEW: 0 TO 45 DEGREES

PARALLEL STEEL GIRDERS WITH A MINIMUM TOP FLANGE WIDTH OF 16" AASHTO GIRDERS (TYPE II, III, IV, V AND VI) OR PRESTRESSED BULB TEE GIRDER.

FOR PRECAST PANELS - MAX. BEAM/GIRDER SPACING = 10'-0"

FOR PRESTRESSED PANELS — MAX. BEAM/GIRDER SPACING = 12'-0''

MAX. OVERHANG = 4'-0''MIN. OVERHANG = 1'-0''

DEAD LOADS:

35 PSF FUTURE OVERLAY

NO MORE THAN 2 EXTERIOR TRAFFIC PARAPETS PER PANEL

MAX. DEAD LOAD PER PARAPET = 569 PLF

SHEAR BLOCKOUT WIDTH: 4" MAX. (BOT. OF PANEL). 5" MAX. (TOP OF PANEL).

SHEAR BLOCKOUT LENGTH: 16" MAX. (BOT. OF PANEL), 17" MAX. (TOP OF PANEL),

PANEL-TO-PANEL CONNECTIONS:

ALL PANELS TO BE CONNECTED WITH LONGITUDINAL POST-TENSIONING COMBINED WITH A TRANSVERSE GROUTED KEYWAY JOINT.

IMPLEMENTATION

IT IS THE DESIGNER'S RESPONSIBILITY TO:

DESIGN AND CHECK THE REQUIRED SHEAR STUDS AND/OR REINFORCING STEEL CONNECTING THE GIRDERS/BEAMS TO THE DECK TO ENSURE ADEQUATE COMPOSITE ACTION BETWEEN THE FRAMING MEMBERS AND PANELS IN ACCORDANCE WITH

CREATE THE CONCRETE DECK PANEL LAYOUT SHEET SHOWING TYPE AND NUMBER OF PANELS TO BE USED AS WELL AS NUMBER AND SPACING OF SHEAR BLOCKOUTS REQUIRED.

CALCULATE FINAL DECK ELEVATIONS AND CREATE TOP OF PANEL ELEVATIONS SHEET(S).

DESIGN AND CHECK ALL CHARACTERISTICS RELATED TO REQUIRED CLOSURE POURS.

CHECK THE STRUCTURAL CAPACITY OF THE EXISTING GIRDERS/BEAMS AND/OR NEW GIRDERS/BEAMS FOR THE INSTALLATION OF THE PANELS (INCLUDING EFFECTS OF PANEL INSTALLATION SEQUENCING). USE OF THIS GUIDELINE DRAWING IMPLIES NO ASSERTION AS TO THE STRUCTURAL CAPACITY OF ANY GIRDERS OR BEAMS SHOWN. DEVELOP LOAD RATINGS AS DIRECTED BY UDOT. VERIFY ADEQUATE CAPACITY IN GIRDERS FOR THE FEFECTS OF LOAD TERM POST TERMS ON THE WHEN ADELICABLE EFFECTS OF LONG TERM POST-TENSIONING WHEN APPLICABLE.

DESIGN ALL POST-TENSIONING. SHOW SIZE AND LAYOUT OF DUCTS. SPECIFY JACKING FORCES, SEQUENCE OF JACKING, DUCT WOBBLE COEFFICIENTS, AND DUCT COEFFICIENT OF

PROVIDE POSITIVE DRAINAGE DETAILS PER UDOT STANDARD PRACTICE. DRAINAGE HOLES THROUGH THE PANELS ARE PROHIBITED.

DESIGN AND ACCOMMODATE APPLICABLE REINFORCEMENT FOR A HAUNCH GREATER THAN 3 $^{\prime\prime}$.

INCLUDE APPLICABLE GENERAL NOTES IN THE PLAN SET.

VERIFY SIZE AND SPACING OF REINFORCEMENT CONNECTING PARAPET TO PANEL IF PARAPET OTHER THAN TYPE SPECIFICALLY SHOWN IN THESE STANDARD DRAWINGS IS USED.

AT A MINIMUM. EXTEND CONTINUOUS REINFORCEMENT, TOP AND BOTTOM, FROM PRECAST PANEL, #6 AT 6" SPACING INTO CLOSURE POUR. CLOSURE POUR DETAILS SHOWN FOR MAXIMUM BEAM SPACING OF 10'-0". FOR BEAM SPACINGS GREATER THAN 10'-0", DESIGN AND DETAIL CLOSURE POUR AND APPROPRIATE POST-TENSIONING AS REQUIRED.

INCLUDE A TABLE OF ESTIMATED QUANTITIES OF PRECAST CONCRETE DECK PANELS. TABLE TO INCLUDE THE FOLLOWING:

- PANEL TYPE (BASED ON PANEL LAYOUT)

- NUMBEF OF EACH PANEL TYPE REQUIRED

- SQUARE FOOTAGE OF AREA PER PANEL

- TOTAL SQUARE FOOTAGE OF DECK PANELS

GENERAL NOTES

PRECAST CONCRETE PANELS DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION WITH ALL INTERIM PROVISIONS.

PANELS DESIGNED FOR AN HL-93 LOAD INCLUDING AND A 35 PSF LOAD FOR FUTURE OVERLAY.

PRECAST PANEL CONCRETE:

f'c = 4.000 PSI

PRESTRESSED PANEL CONCRETE: f'ci = 4.000 PSIf'c = 5.000 PSI

CLOSURE POUR CONCRETE:

f'c = MATCH PRECAST ELEMENTS

NON-SHRINK GROUT:

f'c = 5.000 PSI @ 24 HRS

REINFORCING STEEL (COATED)

fy = 60.000 PSI

PRESTRESSED LOW RELAXATION STRAND:

fpb+ = 202.5 KSI fpu = 270.0 KSI

STRUCTURAL STEEL:

fy = 50,000 PSI AASHTO M270 GR 50

USE UTAH DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (THE LATEST EDITION AND SUPPLEMENTS THERETO WHICH ARE IN EFFECT AT THE DATE OF REQUEST FOR BIDS) ALONG WITH SPECIAL PROVISIONS SECTION 03339S-FULL DEPTH STANDARD PRECAST CONCRETE DECK PANELS FOR MATERIALS, CONSTRUCTION AND WORKMANSHIP.

WELD ACCORDING TO AASHTO/AWS D1.5 BRIDGE WELDING CODE.

USE THE PCI DESIGN HANDBOOK, PRECAST AND PRESTRESSED CONCRETE, FIFTH EDITION WITH ALL INTERIMS AND ERRATA FOR THE DESIGN AND DETAIL OF LIFTING SUPPORTS AND HANDLING CONSIDERATIONS (NO CRACKING CRITERIA).

USE A HEAVY BROOM FINISH FOR TOP SURFACE OF PANELS AND ALL JOINT SURFACES.

CHAMFER ALL EXPOSED CORNERS $^3 \! \mathcal{A}''$. PRECAST PANELS ADJACENT TO CLOSURE POURS OR OTHER PANELS ARE NOT CONSIDERED EXPOSED CORNERS.

THE PRECAST PANELS HAVE A 1/4" CONCRETE GRINDING ALLOWANCE FOR CORRECTING UNEVEN ROADWAY SURFACES AT TRANSVERSE JOINTS BETWEEN PRECAST CONCRETE DECK PANELS AND END OF BRIDGE DECK OR EDGE OF ADJACENT PHASE(S). DECK THICKNESS SHOWN AS NOMINAL OR FINAL THICKNESS AFTER GRINDING. ACCOUNT FOR 1/4" FOR GRINDING ALLOWANCE.

APPLY CONCRETE POLYMER OVERLAY ON BRIDGE DECK AFTER CONCRETE GRINDING OR STEEL SHOT IS COMPLETE. SEE SECTION 03372 IN THE STANDARD SPECIFICATIONS FOR SURFACE PREPARATION REQUIREMENTS.

SEE "GENERAL LAYOUTS" SHEET FOR PANEL TYPES AND LOCATIONS.

SEE TOP OF PANEL ELEVATIONS SHEETS AND/OR CONCRETE UNIT SHEETS FOR SIZE, TYPE, ORIENTATION, NUMBER AND SPACING OF SHEAR STUDS/BLOCKOUTS.

COAT ALL MILD REINFORCEMENT PER UDOT SPECIFICATIONS UNLESS OTHERWISE NOTED.

USE SYNTHETIC FIBER REINFORCEMENT AND A CORROSION INHIBITOR ADMIXTURE FOR ALL STRUCTURAL GROUT.

USE A CORROSION INHIBITOR ADMIXTURE FOR ALL PANEL AND CLOSURE POUR CONCRETE.

INDEX OF SHEETS

GENERAL NOTES

PDP-2 GENERAL LAYOUTS

PDP-3 TYPICAL PANEL PLANS

PRECAST PANEL REINFORCING

PDP-5 PRESTRESSED PANEL REINFORCING

PDP-6 CLOSURE POUR DETAILS

SHEAR CONNECTOR DETAILS NEW CONSTRUCTION

SHEAR CONNECTOR DETAILS EXISTING CONSTRUCTION PDP-8

PDP-9 SHEAR CONNECTOR BLOCKOUT DETAILS

PDP-10 VERTICAL ADJUSTMENT DETAILS

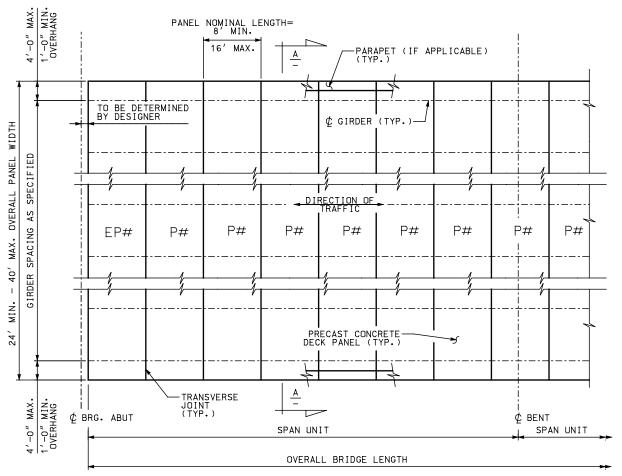
PDP-11 SHEAR KEY PANEL CONNECTION DETAILS

PDP-12 PARAPET DETAILS

PDP-13 TYPICAL POST-TENSIONING DETAILS

DEPARTMENT OF TRANSPORTATION ID DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH UTAH FULL DEPTH PRECAST CONCRETE DECK PANEL GENERAL NOTES

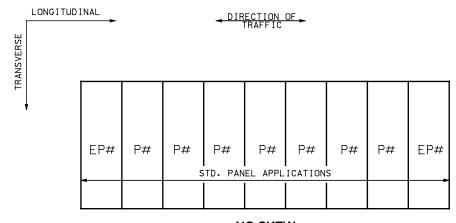
STD. DWG. NO.



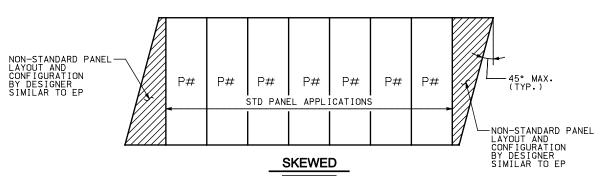


SEE "TYPICAL PANEL PLANS" SHEET FOR ADDITIONAL INFORMATION NOTE: NOMINAL JOINT SPACING SHOWN

PRECAST PANEL TYPES		
EP#	PANEL ADJACENT TO ABUTMENT	
P#	STANDARD INTERIOR PANEL	

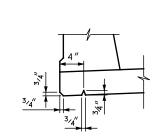


NO SKEW

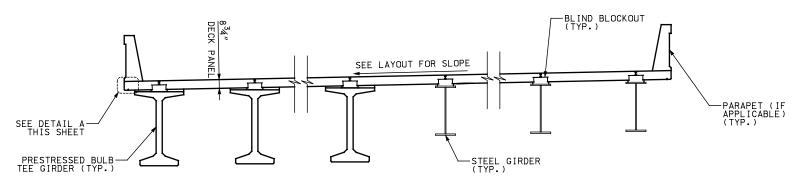


STANDARD PRECAST CONCRETE PANEL APPLICATIONS

NOTE: SMALL CLOSURE POURS MAY BE USED IN ACUTE CORNERS OF SHADED AREAS.



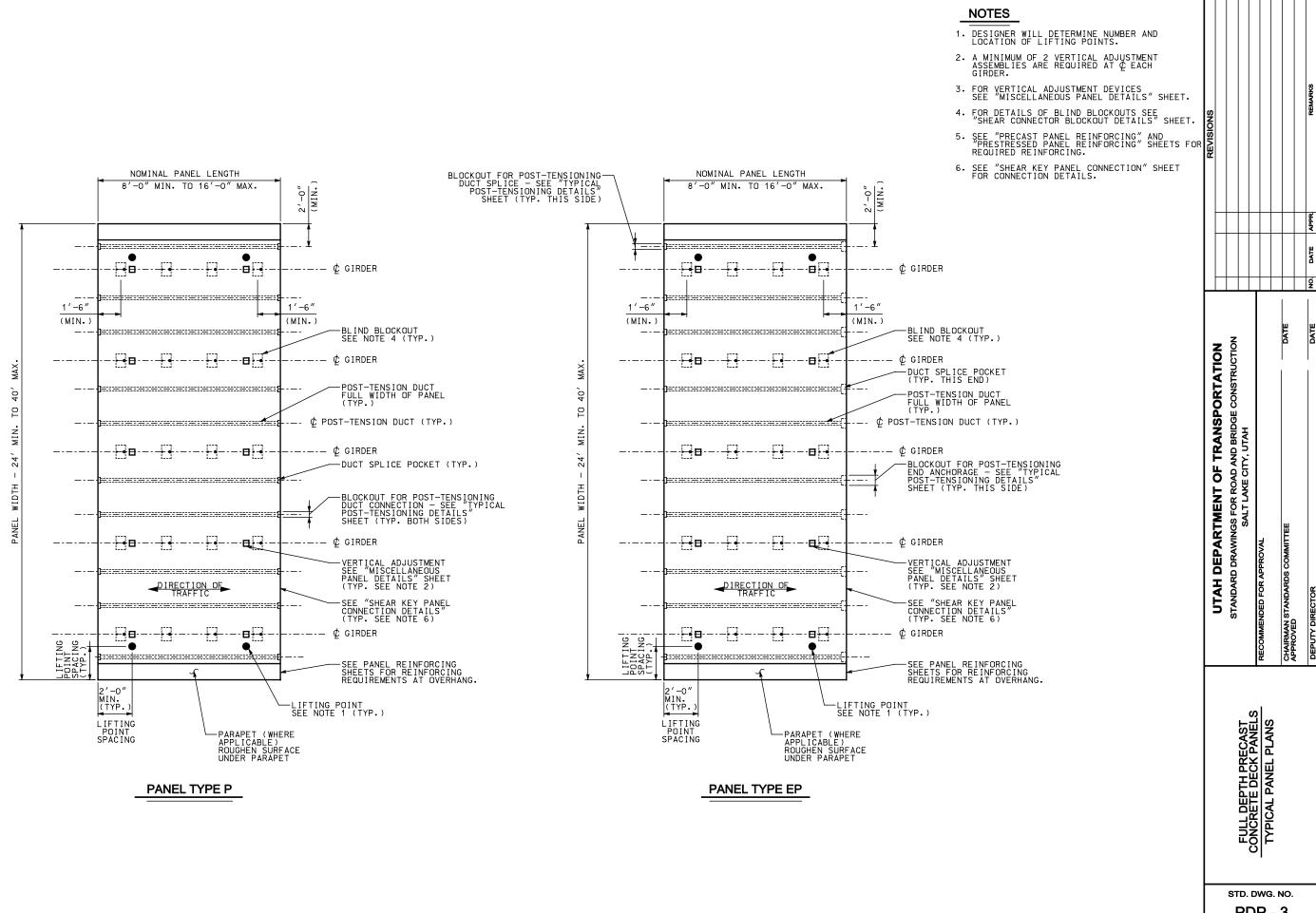
DETAIL A: DRIP GROOVE



SECTION A: PRECAST DECK PANEL

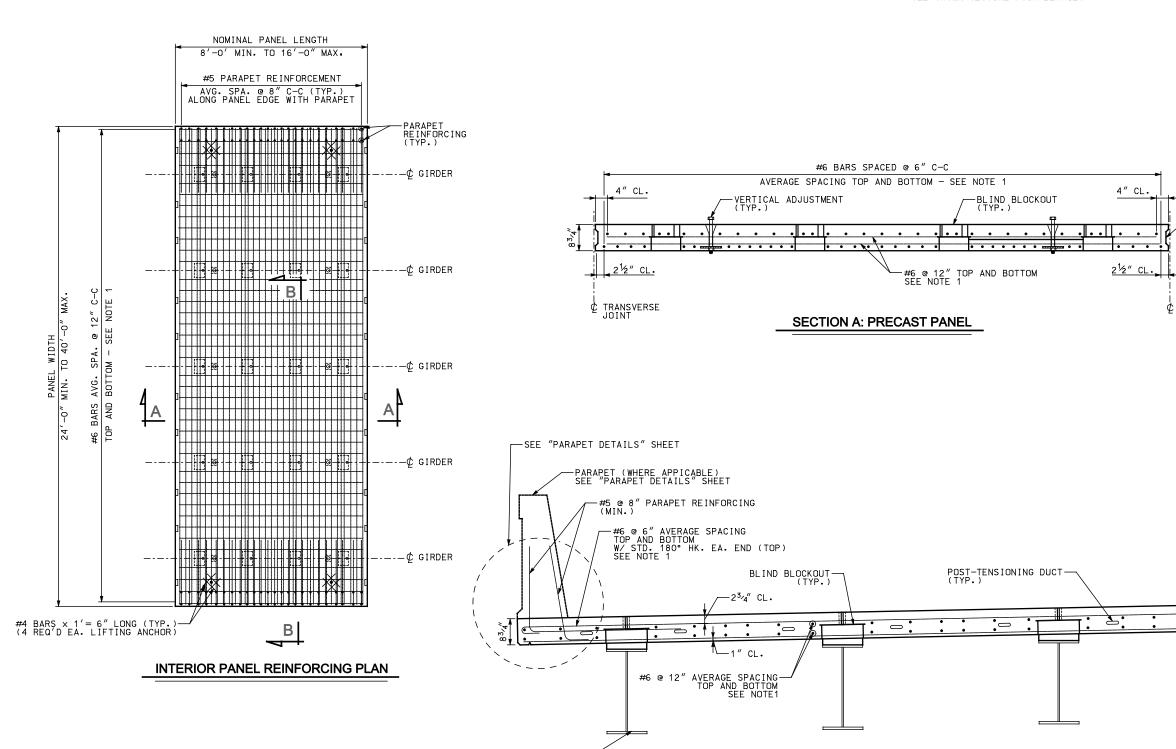
O S UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH FULL DEPTH PRECAST CONCRETE DECK PANELS GENERAL LAYOUTS STD. DWG. NO. **PDP - 2**

GENERAL LAYOUTS.dg



SECTION B: PRECAST PANEL

- ADJUST LOCATION OF BARS TO AVOID CONFLICTS WITH BLOCKOUTS AS APPROVED BY DESIGNER.
- 2. STEEL GIRDER SHOWN, PRESTRESSED BULB TEE GIRDERS ALLOWED.
- 3. HOOK TOP BARS STD 180° EACH END.
- 4. CROWNED ROADWAYS REQUIRE A CLOSURE POUR AT THE CROWN-THIS WILL REQUIRE MULTIPLE PANELS IN A CROSS SECTION. SEE CROWN CLOSURE POUR DETAILS.



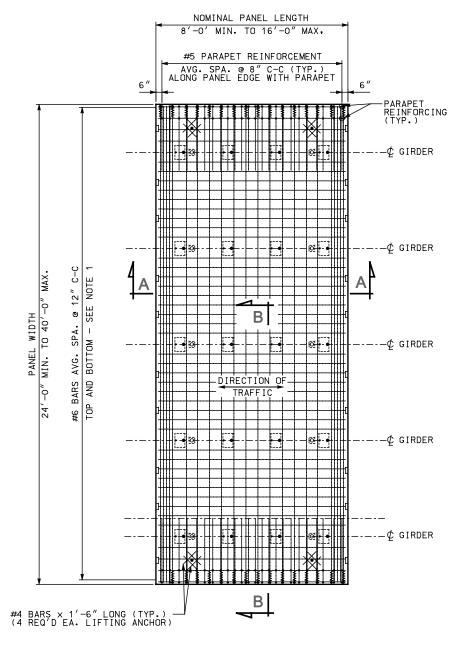
SEE NOTE 2-

ġ UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH FULL DEPTH PRECAST CONCRETE DECK PANEL PRECAST PANEL REINFORCING STD. DWG. NO.

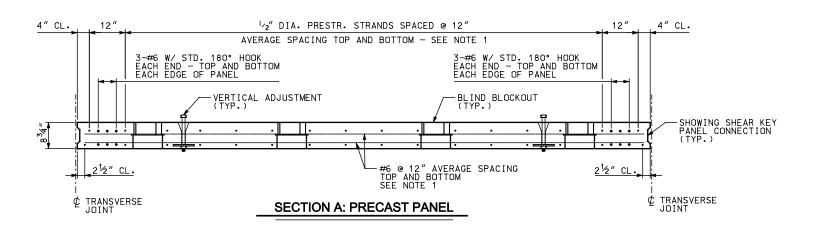
-SHOWING SHEAR KEY PANEL CONNECTION (TYP.)

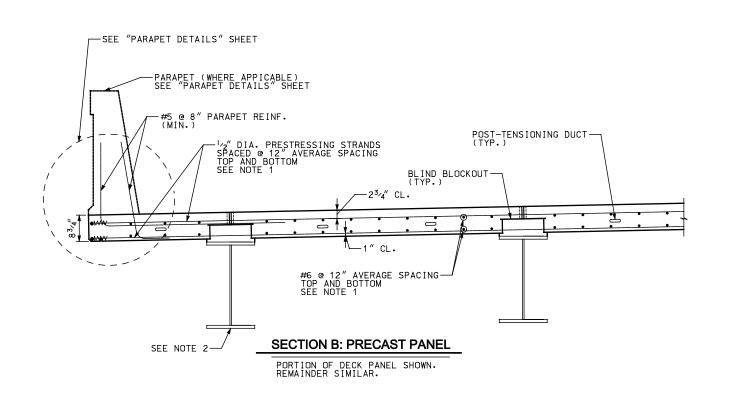
¢ TRANSVERSE JOINT

- 1. ADJUST LOCATION OF BARS TO AVOID CONFLICTS WITH BLOCKOUTS AS APPROVED BY DESIGNER.
- 2. STEEL GIRDER SHOWN, PRESTRESSED BULB TEE GIRDERS ALLOWED.
- 3. HOOK TOP BARS STD 180° EACH END.
- 4. CROWNED ROADWAYS REQUIRE A CLOSURE POUR AT THE CROWN-THIS WILL REQUIRE MULTIPLE PANELS IN A CROSS SECTION. SEE CROWN CLOSURE POUR DETAILS.



INTERIOR PANEL REINFORCING PLAN



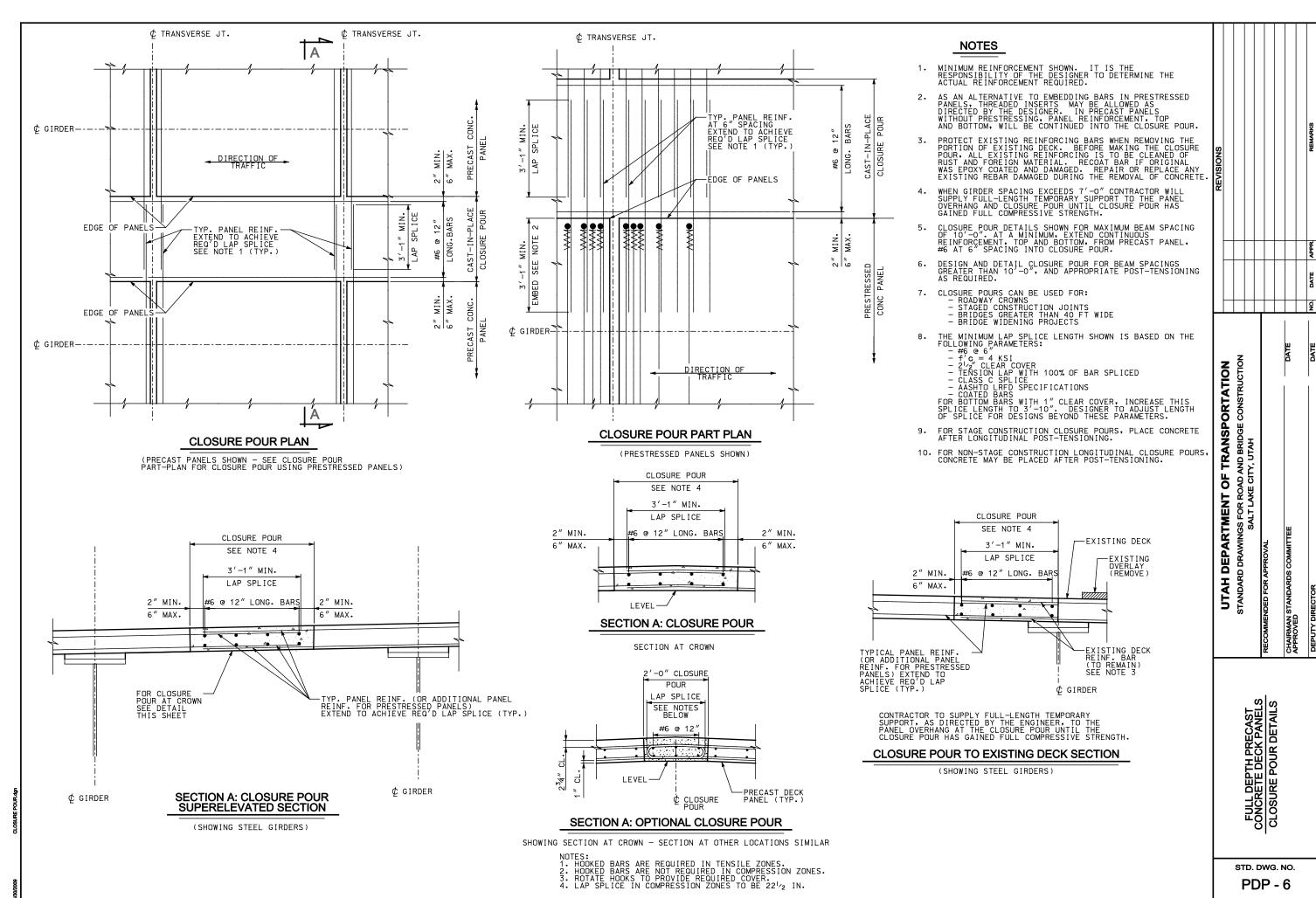


STD. DWG. NO. PDP - 5

FULL DEPTH PRECAST CONCRETE DECK PANELS PRESTRESSED PANEL REINFORCING

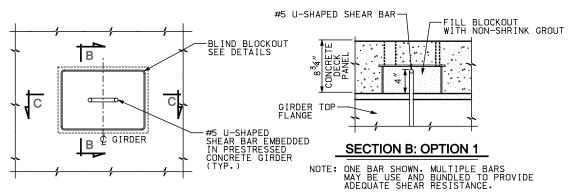
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UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH



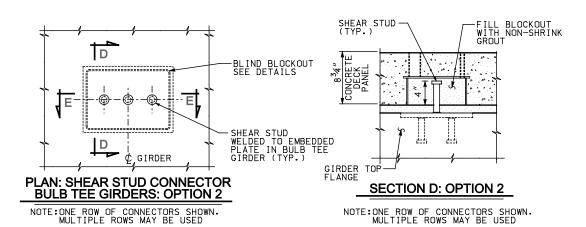
FULL DEPTH PRECAST CONCRETE DECK PANELS CLOSURE POUR DETAILS STD. DWG. NO.

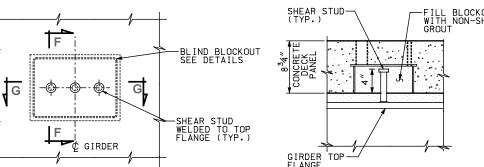
- INCLUDE COST OF WELDED STUD SHEAR CONNECTORS IN THE COST OF THE PRESTRESSED CONCRETE DECK PANEL. INCLUDE COST OF THE U SHAPED REINFORCING BARS IN THE COST OF THE PRESTRESSED CONCRETE GIRDER.
- 2. INCLUDE COST OF ALL NON-SHRINK GROUT IN THE COST OF THE PRESTRESSED CONCRETE DECK PANEL
- 3. USE A HEAVY BROOM FINISH ON TOP SURFACE OF DECK.
- 4. NEW CONSTRUCTION REFERS TO PLACEMENT ON NEW BEAMS.



PLAN: U-SHAPED SHEAR BAR BULB TEE GIRDERS: OPTION 1

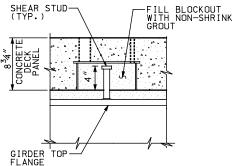
NOTE: ONE BAR SHOWN. MULTIPLE BARS MAY BE USE AND BUNDLED TO PROVIDE ADEQUATE SHEAR RESISTANCE.





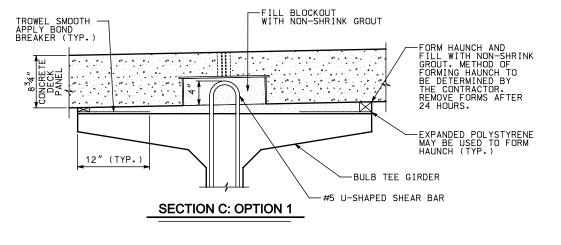
PLAN: STEEL GIRDER DETAILS

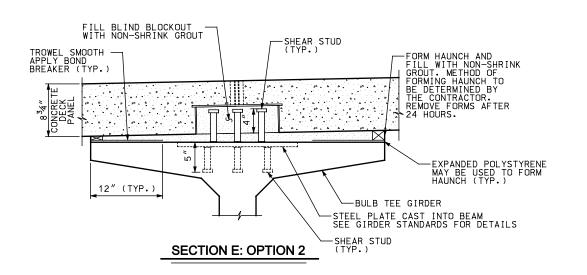
NOTE: ONE ROW OF CONNECTORS SHOWN.
MULTIPLE ROWS MAY BE USED

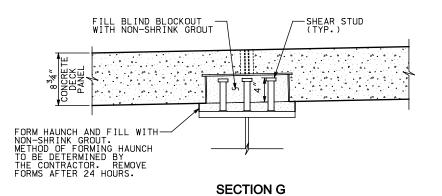


SECTION F

NOTE: ONE ROW OF CONNECTORS SHOWN.
MULTIPLE ROWS MAY BE USED

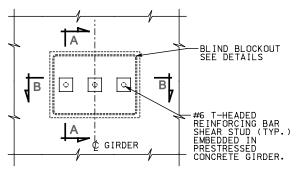






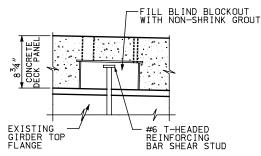
UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH CHAIRMAN STANDARDS APPROVED FULL DEPTH PRECAST CONCRETE DECK PANELS SHEAR CONNECTOR DETAILS NEW CONSTRUCTION STD. DWG. NO.

- 1. INCLUDE COST OF WELDED STUD SHEAR CONNECTORS AND T STUD SHEAR CONNECTORS IN THE COST OF THE PRESTRESSED CONCRETE DECK PANEL.
- 2. INCLUDE COST OF ALL NON-SHRINK GROUT IN THE COST OF THE PRESTRESSED CONCRETE DECK PANEL.
- 3. USE A HEAVY BROOM FINISH ON TOP SURFACE OF DECK.



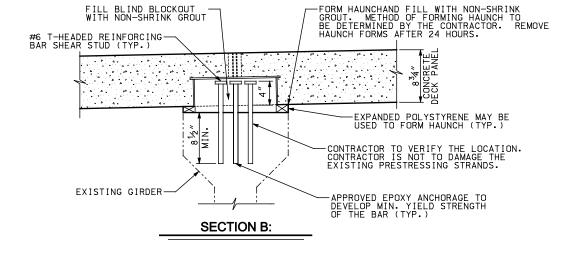
PLAN: T-HEADED SHEAR STUD CONNECTOR ON CONCRETE GIRDERS

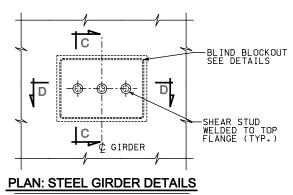
NOTE: ONE ROW OF CONNECTORS SHOWN.
MULTIPLE ROWS MAY BE USED



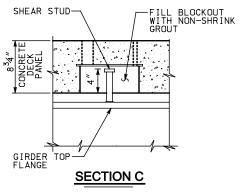
SECTION A

NOTE: ONE ROW OF CONNECTORS SHOWN.
MULTIPLE ROWS MAY BE USED

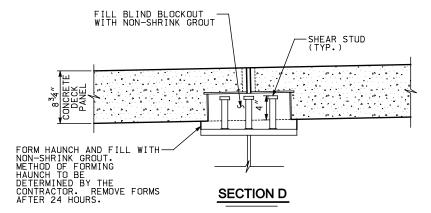


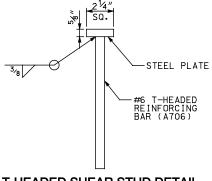


NOTE: ONE ROW OF CONNECTORS SHOWN MULTIPLE ROWS MAY BE USED



NOTE: ONE ROW OF CONNECTORS SHOWN.
MULTIPLE ROWS MAY BE USED





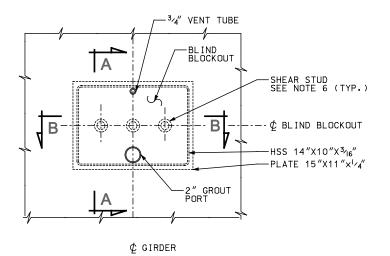
T-HEADED SHEAR STUD DETAIL

STD. DWG. NO.

FULL DEPTH PRECAST CONCRETE DECK PANELS SHEAR CONNECTOR DETAILS EXISTING CONSTRUCTION

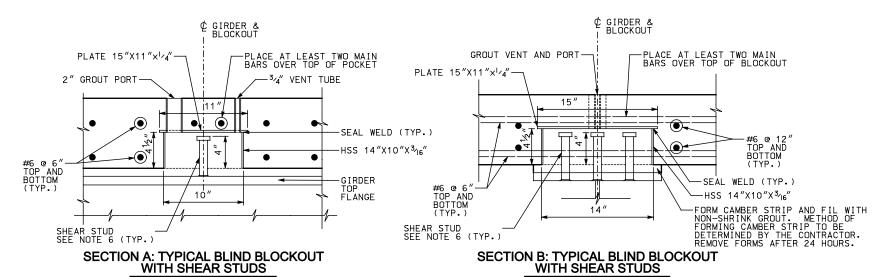
UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH

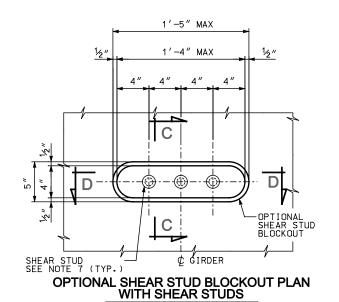
CHAIRMAN STANDARDS APPROVED

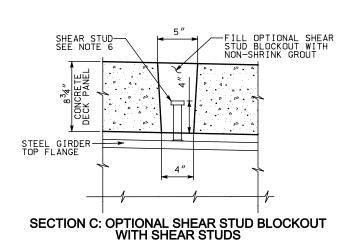


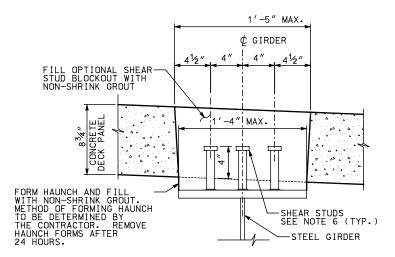
TYPICAL BLIND BLOCKOUT PLAN WITH SHEAR STUDS

NOTE: REINFORCEMENT NOT SHOWN FOR CLARITY.







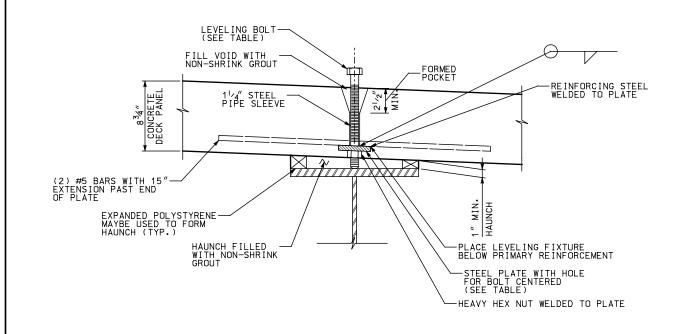


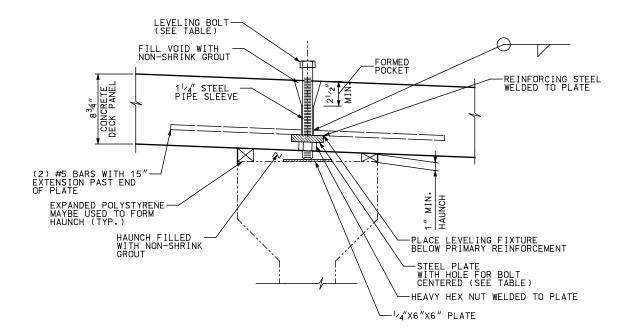
SECTION D: OPTIONAL SHEAR STUD BLOCKOUT WITH SHEAR STUDS

NOTES

- 1. INCLUDE COST OF SHEAR STUDS IN PAY ITEM "PRESTRESSED CONCRETE DECK PANEL".
- 2. INCLUDE COST OF ALL NON-SHRINK GROUT IN PAY ITEM "PRESTRESSED CONCRETE DECK PANEL".
- 3. USE A HEAVY BROOM FINISH ON TOP SURFACE OF DECK AND INSIDE FACE OF OPTIONAL SHEAR STUD BLOCKOUTS.
- 4. NEW CONSTRUCTION REFERS TO PLACEMENT ON NEW BEAMS.
- 5. EXISTING CONSTRUCTION REFERS TO A NEW DECK PLACED ON EXISTING BEAMS.
- 6. DESIGN SIZE, NUMBER, AND SPACING OF SHEAR STUDS.
- 7. STEEL GIRDER SHOWN. CONCRETE GIRDER SIMILAR.

ġ UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH FULL DEPTH PRECAST
CONCRETE DECK PANELS
SHEAR CONNECTOR
BLOCKOUT DETAILS STD. DWG. NO. **PDP - 9**

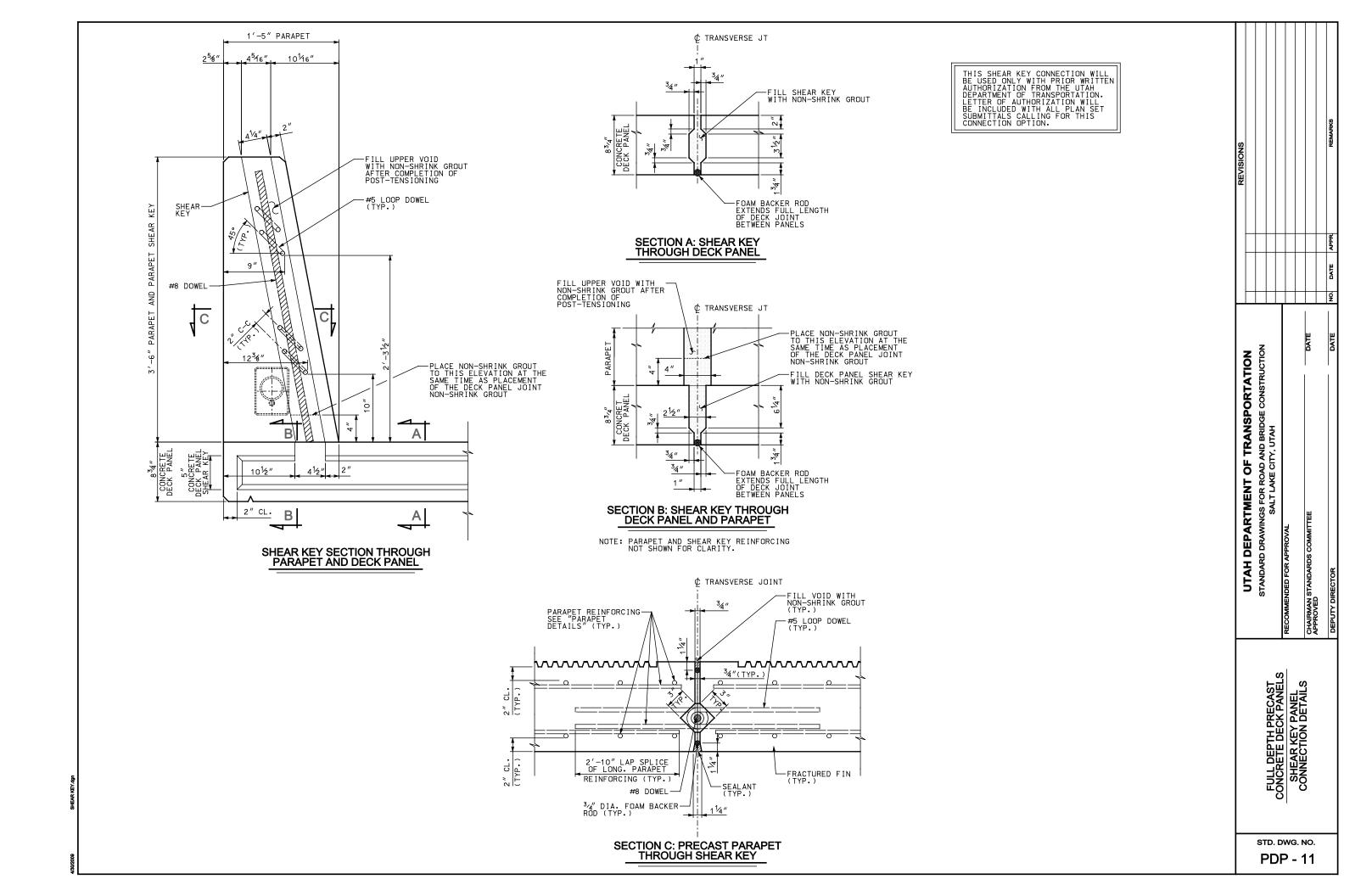


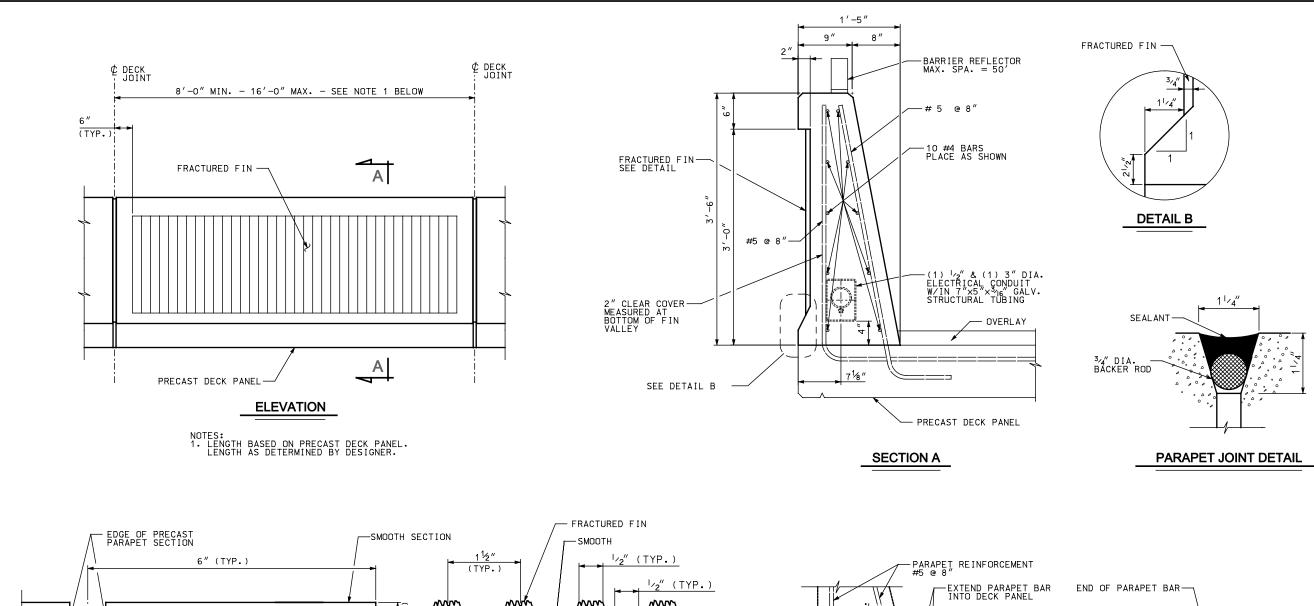


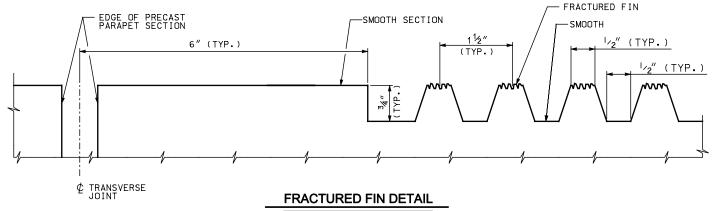
VERTICAL ADJUSTMENT DETAIL ON STEEL GIRDER VERTICAL ADJUSTMENT DETAIL ON CONCRETE GIRDER

UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH

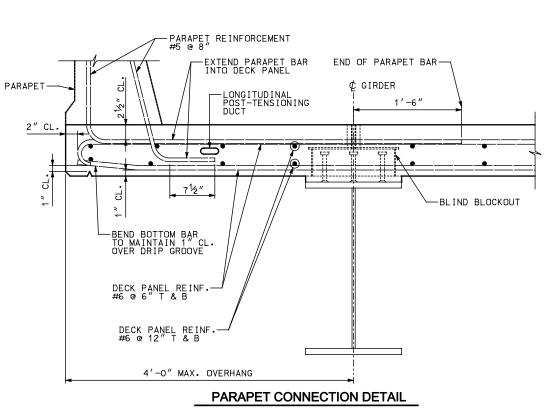
VERTICAL ADJUSTMENT SCHEDULE			
SERVICE LOAD	BOLT DIA.	STEEL PLATE WITH HOLE FOR BOLT CENTERED	
10 K	1 "	4 "×4 "× ⁵ ⁄ ₈ "	
20 K	11/4"	4 "×4 "× ⁷ / ₈ "	







- 1. EXTEND SEALANT AND FOAM BACKER ROD FROM DECK TOP TO TOP OF PARAPET ON THE INSIDE PARAPET FACE, AND ACROSS TOP OF PARAPET.
- 2. ADJUST BAR SPACING AS REQUIRED TO NOT EXCEED MAXIMUM SPACING SHOWN.
- 3. FRACTURED FIN PARAPET IS SHOWN, OTHERS MAY BE USED.
- 4. VALID FOR TL-4.

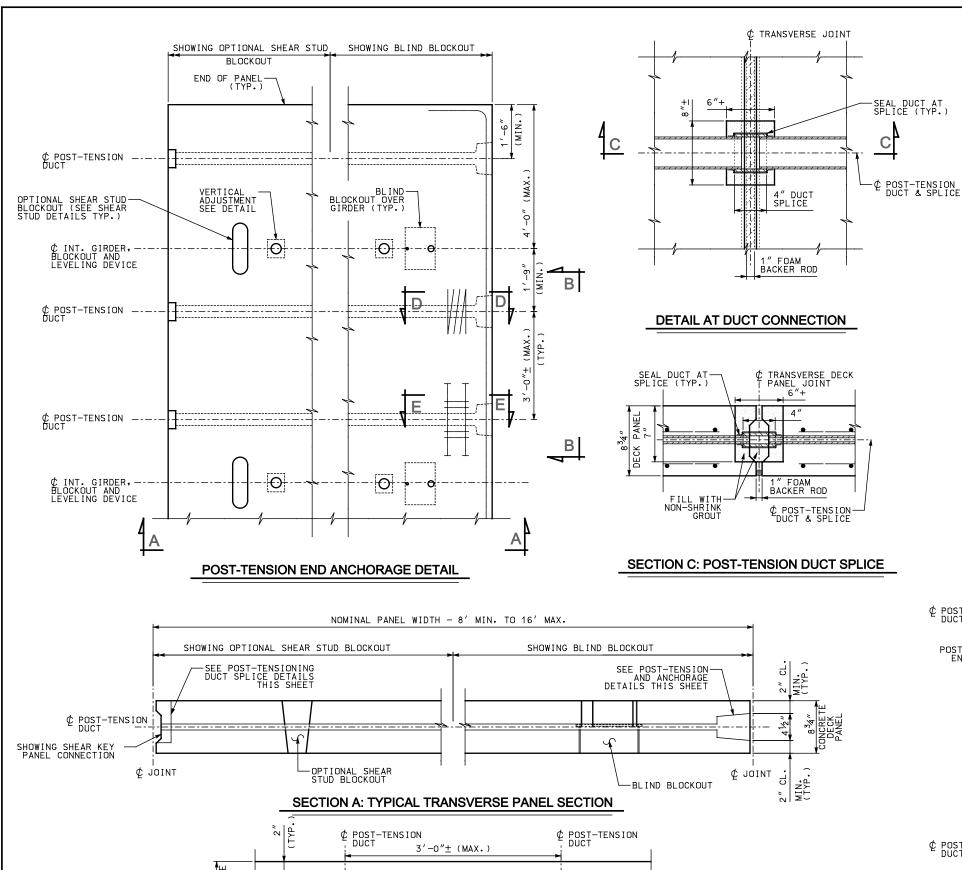


STD. DWG. NO. **PDP - 12**

FULL DEPTH PRECAST CONCRETE DECK PANELS PARAPET DETAILS

<u> j</u>

UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH



POST-TENSION
DUCT AND END
ANCHOR BLOCKOUT

-

SECTION B: TYPICAL LONGITUDINAL PANEL SECTION

10³4"

POST-TENSIONING NOTES:

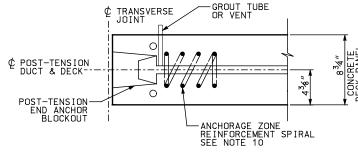
- USE 0.5" DIA. GRADE 270 LOW RELAXATION STRANDS CONFORMING TO ASTM A416.
- 2. USE 4 STRANDS PER DUCT MAXIMUM.
- GALVANIZE BEARING PLATE ANCHOR HEADS AND METAL TRUMPETS AT ANCHORAGES. DO NOT GALVANIZE STRAND GRIPPING WEDGES.
- DESIGN BASED ON THE FOLLOWING POST-TENSION DUCT PARAMETERS:

 COEFFICIENT OF FRICTION = 0.XX

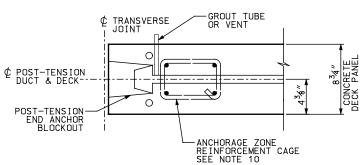
 WOBBLE FRICTION COEFFICIENT = 0.000X

 IF THE PROPOSED DUCT DOES NOT MEET THESE VALUES, THEN THE CONTRACTOR TO ADJUST THE JACKING FORCE TO PRODUCE THE FINAL POST-TENSIONING FORCE LISTED BELOW.
- BEGIN STRESSING AT CENTER OF PANELS. DO NOT ALLOW MORE THAN 12.5% OF THE PRESTRESSING FORCE TO BE ECCENTRIC AT ANY TIME. SUBMIT STRESSING SEQUENCE TO ENGINEER FOR APPROVAL PRIOR TO WORK.
- CURE DECK PANELS A MINIMUM OF 56 DAYS PRIOR TO PRESTRESSING OPERATIONS.
- DECK PANELS MUST BE ALLOWED TO SLIDE ON GIRDERS DURING PRESTRESSING.
- 8. P-JACKING PER STRAND = XX.X KIPS.
- P-FINAL PER STRAND = XX.X KIPS (AFTER LOSSES DUE TO FRICTION, ANCHORAGE SET AND ELASTIC SHORTENING).
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF ALL POST-TENSIONING ELEMENTS AND ANCHORAGE ZONE REINFORCEMENT (REQUIRED FOR SPLITTING, BURSTING, SPALLING, ETC.) INCLUDING THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING POST-TENSIONING DEVICES). DESIGN MUST CONFORM WITH AASHTO LRFD SPECIFICATIONS. TYPICAL REINFORCING FOR TWO DIFFERENT MANUFACTURERS ARE SHOWN.
- 11. SEQUENCE OF CONSTRUCTION:

 A. ERECT DECK PANELS.
 B. ADJUST PANELS TO GRADE USING LEVELING DEVICES.
 C. INSTALL POST-TENSIONING STRAND LOOSE IN DUCTS.
 D. PLACE GROUT IN TRANSVERSE JOINTS ONLY.
 CURE TO 500 PSI.
 E. STRESS POST-TENSIONING STRAND.
 F. GROUT POST-TENSIONING DUCTS.
 G. GROUT SHEAR CONNECTOR POCKETS AND CAMBER STRIPS.
 H. LEVELING BOLTS MAY BE REMOVED. GROUT BOLT RECESS.



SECTION D: END ANCHORAGE ZONE REINFORCEMENT OPTION 1



SECTION E: END ANCHORAGE ZONE REINFORCEMENT OPTION 2

UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH FULL DEPTH PRECAST CONCRETE DECK PANELS TYPICAL POST-TENSIONING DETAILS

> STD. DWG. NO. **PDP - 13**